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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/817,797

Filing Date: March 27, 2001

Appellant(s): HERMANN, MICHAEL

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David S. Safran  
Reg. No. 27,997  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed November 17, 2009 and January 7, 2010 appealing from the Office action mailed March 17, 2009.

**(1) Real Party in Interest**

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The following is a list of claims that are rejected and pending in the application:

Claims 1, 3 and 4 stand rejected.

**(4) Status of Amendments After Final**

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

**(5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

**(6) Grounds of Rejection to be Reviewed on Appeal**

**WITHDRAWN REJECTIONS**

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner:

- (1). The rejection of claims 1 and 3-4 under 35 USC 112, first paragraph as failing to meet the written description requirement.
- (2). The rejection of claims 1 and 3-4 under 35 USC 112, first paragraph as being based on non-enabling disclosure.
- (3). The rejection of claims 1 and 3-4 under 35 USC 112, second paragraph as being indefinite.

### **(7) Claims Appendix**

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

### **(8) Evidence Relied Upon**

5,026,998

HOLZL

6-1991

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Holzl (PN. 5,026,998) in view of applicant admitted prior art.**

**Holzl** teaches an *alignment measurement mechanism* for measuring the relative positions between *two shafts* (1 and 2), *serves as the two elements*, wherein the mechanism comprises a *light source* (8) for generating a light beam (s) that incidents on a first and second *optoelectronic detectors* (9 and 10, Figures 2 and 3) that are connected to the second shaft (2). The two optoelectronic detectors are two-dimensional readable sensors that each generates two dimensional position signals as shown in Figure 2. Holzl further teaches that a *data converter* (3) and a *computer* (4), serve as the *electronic means and computer*, are included for processing the detected positional signal of the detectors to measure the relative position of

the two shafts. The two dimensional position signals generated by each of the position detector are corresponding to the *incident points* of the light on the surface of each of the detectors. The calculating electronics for computing the relative positions from the detected signals are implicitly included to determine the relative positions. It is implicitly true that only portion of the light incident on the first optoelectronic detector will reach the second optoelectronic detector.

It is implicitly true that the light source is located at a known location and the sensors are also located at known locations. The angular offset between the first and second element can be easily detected by measuring the light spots of the incident light registers on the two sensors (A and A', Figures 2 and 3). Since if the two elements are at the level the two spots will be aligned and if there is angular offset the straight lines connecting the two light spots will give an angular inclination that will reveal the angular offset information.

This reference has met all the limitations of the claim with the exception that it does not teach explicitly the arrangement of having the light incidents on the first detector is *reflected instead of transmitted* to the second detector. However it is implicitly true that whether the light incident on the second detector is reflected or transmitted from the first detector the *operational principle* for obtaining the relative position between the two shafts or elements do not change. Since the principle is based on calculating the positional signals detected by the two detectors about the incident points of the light on the two detectors, the modification or the difference, concerning either reflecting or transmitting light from one detector to the other detector, does not change the function of detecting and calculating the relative positions of the two shafts. This difference is therefore considered as an obvious matter of design choice to one skilled in the art for the benefit of providing different design for the measurement mechanism. Furthermore, applicant admitted prior art teaches that a *reflective* type optoelectronic sensor such as CMOS sensor circuit is *commercially available*, (please see page 5 lines 14-20 of the specification). It

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would then have been obvious to one skilled in the art to use a reflective type of detector to make the light reflected from the first detector to the second detector for the benefit of providing a more compact system.

With regard to the housing, the references do not teach such explicitly however it would have been obvious to one skilled in the art to use a housing for the detectors for the benefit of blocking out unwanted light to reach the detectors so that the detectors detect the signals more accurately.

**(10) Response to Argument**

**A. Rejection of claims 1, 3, and 4 being unpatentable under 35 USC 112, first paragraph as failing to meet the written description requirement**

The rejections are withdrawn.

**B. Rejection of claim 4 as being unpatentable under 35 USC 112, first paragraph as being based on non-enabling disclosure**

The rejections are withdrawn. .

**C. Rejection of claims 1, 3 and 4 for indefiniteness under 35 USC 112, second paragraph**

The rejections are withdrawn.

**D. Rejection of claims 1, 3, and 4 as being unpatentable under 35 USC 103(a) over the Holzl '998 patent when in viewed in conjunction with applicant's admitted prior art (AAPA)**

In response to appellant's arguments which state that the declaration by Bloch (paragraphs 3-7) teaches that it is not obvious to use the reflectivity of the known sensors, the examiner respectfully disagrees for the reasons stated below.

(1). Bloch's mere statements concerning the non-obviousness of using a reflective sensor instead a transparent sensor are without factual basis. Both the cited Holzl reference (Figure 2) and the instant application using coordinate of the light signal detected by the first sensor and the coordinate detected by the second sensor when the light signal passes from the first sensor to the second sensor to determine the positional information between the first and second elements. Whether the light signal is *transmitted* from the first sensor to the second sensor or *reflected* from the first sensor to the second sensor, will all give raise to these two detected coordinates for positional information calculation. It is therefore within general level of skill in the art to either use a reflective sensor or a transmission sensor since either one will yield the same result, namely two detected coordinates by related light signal from first sensor to the second sensor. Bloch's arguments concerning the using of anti-reflective coating is irrelevant here since this coating is *only* used when a transmission sensor is in design. When a reflective sensor is in design, no anti-reflective coating is needed. Furthermore, a reflective sensor and a transmission sensor are equally known in the art and the reflectivity and transmissibility of light are equally well known to one skilled in the art since they are fundamental properties of light.

(2). Contrary to the arguments provided by Bloch in the declaration, the examiner does provide reason and motivation to use a reflective sensor. It is a known fact in the art that reflective element can be used to fold the light path which would reduce the relative space between two sensors and reduce the size of a housing for housing the sensors or the device as whole. It also introduces certain degree of freedom for the arrangement of the sensors with respect to the elements intended to be measured. This is a reasonable motivation to one skilled in the art to use a *commercially known* reflective type sensor to make a more compact arrangement for the sensors. The arguments concerning the "sufficiently strong light source" should be equally needed for using transmissive type or reflective type of sensors, since both arrangements need to direct the light from one sensor to the other sensor. It is therefore not the basis for non-obviousness concerning the reflective type of sensor.

(3). In response to appellant's arguments which state that the reasons for rejection are based on examiner's personal opinion, the examiner respectfully disagrees. The reasons for rejections provided thus far are based on solid scientific knowledge. The factual basis for the rejection is cited Holzl reference ('998) and fundamental theory of optics. The reflectivity and transmissivity of light is the fundamental knowledge of person works in the optical field or even to the ordinary person.

(4). In response to arguments according to declaration of Holzl, (paragraphs 3 and 5), the stray reflection considered problem is actually due to a stray reflection from the surface of a *transmission* sensor. The instant application is based on the stray reflection from a reflective sensor. The instant application never discusses the problem concerning stray reflections since only to a transmissive sensor that the stray reflection is a problem, not to a reflective sensor. The arguments therefore are immaterial to the "obviousness" of replacing a transmissive sensor by a reflective sensor. In response to the arguments concerning the structural arrangement of a reflective sensor, the examiner respectfully points out that it is within general level of knowledge in the art that in order for a light signal to be *reflected* off the first sensor and be directed to a second sensor, the second sensor *has to be* placed in the light path of the reflected light beam and the second sensor *has to be* placed in front of the first sensor. The claims has never explicitly *claimed* the structure of the sensors be like the one shown in Lysen patent (PN. 6,337,742), the comparison and the arguments with respect to the Lysen patent therefore are immaterial to overcome the rejection.

(5). In response to appellant's arguments as according to the declaration of Bloch, the lack of known reasons to use the reflectivity of known optoelectronic sensor in an alignment device makes the utilizing a reflective sensor non-obvious, the examiner respectfully disagrees. The rejection is not based on finding reflective optoelectronic sensor in an alignment device but based on the commercially availability of a *reflective* optoelectronic sensor and the common sense that a reflective sensor simply functions the same as a transmissive sensor to direct light signal to a second sensor. The motivation for



replacement is further relied upon the advantage of using reflective sensor to reduce the extend of the housing or to make the device more compact. The knowledge of utilizing folded light path by using reflective element to provide compact arrangement is common practice in the art.

(6). In response to appellant's arguments which state that according to the declarations "this applicant realized that the reflectance possessed by the known optoelectronic sensors was anything other than a detriment and could be used to provide accurate position determination in combination with a second sensor" (please see page 9 of the appeal brief first paragraph), which makes the utilization of the reflective type sensor an non-obvious modification, the examiner respectfully disagrees. The statement in the declaration is not really clear that if the reflectance being viewed as a detriment for a transmissive type sensor or for a reflective type sensor. It is true that the reflectance would be a detriment for a transmissive type of sensor but why would it be for a reflective type of sensor. Actually it is not the appellant but the inventor of the reflective type optoelectronic sensor realized the advantage of the reflectance or reflectivity nature of the reflective type of the sensor. Replacing a transmissive type of the sensor by a reflective type of sensor ONLY involves the rearranging of parts to move the second sensor into the reflected light path ( instead of in the transmitted light path) from the first sensor and that is only based on fundamental knowledge of optics.

(7). In response to appellant's arguments concerning other arrangements disclosed in the prior art references (US patents 6,337,742 and 6,476,914), the examiner respectfully notes that citing any other references based on other arrangements including other optical elements are not relevant to demonstrate that the reflective optoelectronic sensor cannot be utilized by other inventor than the appellant in position evaluation device. Using mirror or prism in other arrangements does not mean the reflective sensor cannot be utilized at the time of the other arrangements being disclosed. This actually shows that many different elements of *reflective* nature are known in the art, to choose one or the other is considered obvious matters of design choice to one skilled in the art.

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**It is for these reasons that claims 1, 3, and 4 as being unpatentable under 35 USC 103(a) over the Holzl '998 patent in viewed in conjunction with applicant's admitted prior art (AAPA).**

**It is noted that the evidences listed in the evidence appendix have been fully discussed in the arguments above.**

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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